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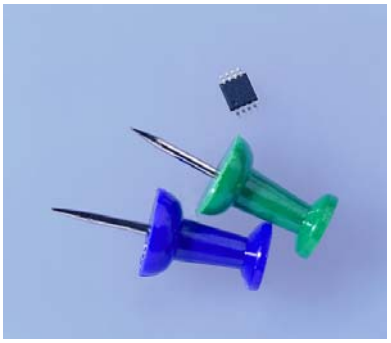
RF SILICON AND SUBSYSTEMS SOLUTIONS
FOR BROADBAND COMMUNICATIONS AND AUTOMOTIVE ELECTRONICS

MT1230 IF VARIABLE-GAIN AMPLIFIER

PRODUCT BRIEF

The MT1230 IF variable-gain amplifier offers low distortion, low noise, and low power consumption.



MT1230 IF Variable-Gain Amplifier

The Microtune MT1230 is a low-cost intermediate frequency (IF) variable-gain amplifier IC for use in digital cable TV (CATV), cable modem, internet protocol (IP) telephony, cable-ready TV, and digital TV systems.

The MT1230 provides both a high impedance differential input and a low impedance differential output, making it immune to common mode noise and minimizing shielding requirements. Operating from a single +5V supply, the two-stage amplifier design typically draws 20 mA. The temperature-compensated analog control voltage produces a dB linear gain characteristic throughout the entire control voltage range.

The MT1230 is available in an 8-pin TSSOP package.

APPLICATIONS

- Cable modems
- Telephony over cable
- CATV set-top boxes
- Cable-ready TVs
- Digital TVs

FEATURES

- Analog dB linear gain control characteristic
- Temperature-compensated gain control
- 57 dB maximum gain
- Supply-independent voltage gain
- 95 MHz bandwidth
- Low distortion
- Low noise
- Low power consumption
- Single +5V supply
- 8-pin TSSOP package

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TERMINAL CONNECTIONS

PIN	FUNCTION/SYMBOL	DESCRIPTION
1	VCC	Supply
2	IN1	Amplifier input 1
3	IN2	Amplifier input 2
4	VAGC	Gain control
5	GND	Ground
6	OUT2	Amplifier output 2
7	OUT1	Amplifier output 1
8	GND	Ground

AC ELECTRICAL CHARACTERISTICS

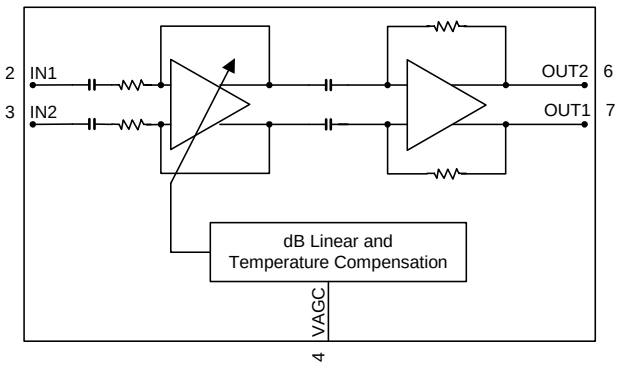
PARAMETER	MIN	TYP	MAX	UNIT
Voltage gain, minimum, VAGC = 0.7			30	dB
Voltage gain, maximum, VAGC = 3.3	54	57		dB
AGC range	24	42		dB
Gain variation, over 6 MHz		0.5		dB
Frequency range				
<1 dB rolloff			60	MHz
<3 dB rolloff			95	MHz
Noise figure				
A_V = 54 dB		9.5		dB
A_V = 30 dB		16		dB
Output IM3, gain adjusted for V_{OUT} = 51 dBmV, A_V > 30 dB			-53	dBc
Output IP3, gain adjusted for V_{OUT} = 51 dBmV, A_V > 30 dB		80		dBmV
1 dB compression input		34		dBmV
Input impedance		2.2 || 1.7		kΩ || pF
Output impedance		34		Ω

DC ELECTRICAL CHARACTERISITICS

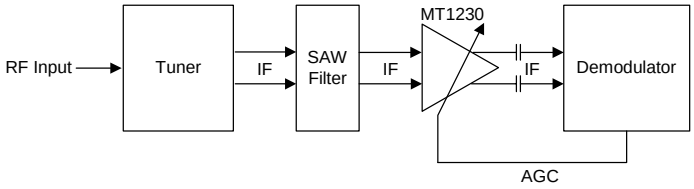
PARAMETER	MIN	TYP	MAX	UNIT
Supply voltage	4.5		5.5	V
Supply current		20	24	mA
Gain control voltage	0.7		3.3	V
VAGC input impedance		60		kΩ

ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN	MAX	UNIT
VCC	-0.7	5.5	V
Input voltage levels (all inputs), VCM	-0.7	VCC + 0.7	V
Junction temperature		+100	°C
Storage temperature range	-55	+150	°C
Lead temperature (soldering, 10 seconds)		+245	°C

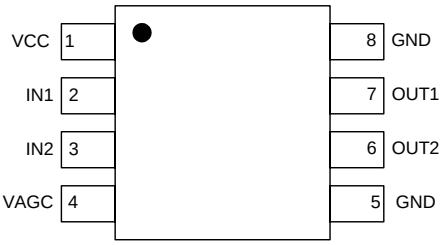


MT1230 Typical Application



MT1230 Block Diagram

Top View



MT1230 Pin Configuration

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Microtune, Inc., 2201 Tenth Street, Plano, TX 75074, USA

Tel: +1-972-673-1600, Fax: +1-972-673-1602, E-mail: sales@microtune.com, Web site: www.microtune.com

For a detailed list of design centers, sales offices, and sales representatives, visit our Web site at www.microtune.com.